Nationaal Lucht- en Ruimtevaartlaboratorium
National Aerospace Laboratory NLR

AMS Tracker Thermal Control Subsystem

TTCB and condenser tube cutting procedure

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https://ams-ttcs.nlr.nl

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Document change log

Change Ref.	*Section(s)*	*Issue 1.0*
-	All	Initial issue

	Section(s)	*Issue 2.0*
	all	Reference for QM and FM condenser tube cutting before and after bending
	3.1	Argon instead of N2
		Filter dimension change to 0.45 instead of 10 micron

	Section(s)	*Issue 2.0*

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Summary

This document describes the tube cutting procedure which can be used for cutting of TTCS box internal and external tube parts and the condenser Inconel tubes after the bending.

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Contents

(10 pages in total)

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1 Scope of the document

The procedure in this document describes the tube cutting procedure.

2 References documents

	Title	Number	Date
RD-1	TTCS Leak rate	AMSTR-NLR-TN-046-Issue 1.0	April 2006

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3 Tube cutting procedure

3.1 Tube cutting procedure sheets

The tube cutting procedure sheets shall be filled in, and shall accompany the box and condenser tubes during its lifetime in order to be able to show what procedure was followed.

To minimise the amount of documentation the form is filled in:

1. The first time the tube cutting takes place
2. Every time the equipment for tube cutting is changed:
    a. Change of tube cutting equipment
    b. Changing of filters
    c. Change of tube diameter (pressure needs to be adjusted)
    d. Start working on another model (QM Primary, FM Primary, FM Secondary, FM external tubes, QM and FM condenser tubes after bending)

This is done to keep track of change in equipment. Any problems with welds and/or contamination can then be traced.

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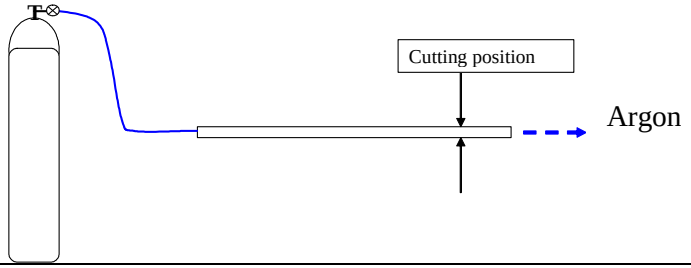
	Tube cutting procedure sheet		company:		date:	
	Fill in by hand.		engineer:		location:	
Step	Action	Monitoring	Value	**Result**	Comment	√
1	Record model (FM1/FM2/QM) for which the cutting of tubes is performed	Model	-			
2	Record pipe part drawing number					
3	Make picture of part	Record picture time as on photo				
4	Perform visual inspection inlet and outlet tube	Clean/particles/ grease				
5	Clean outside tube with IPA and lint-free cloth					
6	Record cutting equipment used	Manufacturer, type/serial number	-			
7	Record filter type	Manufacturer/filter size	0.45 µm			
8	Connect the filter and a clean flexible (silicone) hose to a N_2-(or Argon)bottle delivering gaseous Argon gas as shown in figure.		-			

	Tube cutting procedure sheet		company:		date:	
	Fill in by hand.		engineer:		location:	
Step	Action	Monitoring	Value	**Result**	Comment	√
						
9	Limit the pressure of the gaseous nitrogen/argon to a reasonable flow (0-4bar) check the used pressure prior to connecting the tube part	Pressure	0-4 bar			
10	Flow gaseous nitrogen/argon through the hose prior to connect to the tube part		-			
11	Connect the flexible hose to the tube as shown in above figure. Set a fixed gaseous flow	Check flow at outside				
12	Cut tube					
13	Make picture of set-up and record picture time					
14	Disconnect tube, clean outside with IPA and lint free cloth & perform visual inspection of cut surface	Flat square surface				
15	Cover tube end with caps and store in a clean box or clean environment for further integration					
16	End cutting of part (mention part number at comments)					

END OF DOCUMENT